
Executive Summary

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Various arenas of scientific research can be plagued with ongoing issues that dominate discussion as various studies look at remarkably similar questions over and over again in slightly different contexts. In the natural resource realm, for example, we often look at the primary life history influences on a species or population and try to determine the tipping point between population declines and sustainability. In the social science world, we often see a debate emerge in the literature as researchers explore institutions in our society and try to ascertain whether current trends and policies emerge from them, or whether they have simply evolved to reflect society. Over the years, those of us involved in the USGS National Gap Analysis Program (GAP) have often wondered aloud, among ourselves, similar questions.

We are proud that, beginning in the 1980s, we were at the forefront of scientists and technicians who took on the greatest questions of conservation biology and tried to attack them strategically by using remote sensing and GIS to create data sets that could be applied across large regions, even nationally. But what we cannot say for sure, as the sociologists might ask, is how conservation science might have evolved without GAP.

What might have happened, for instance, if a few leaders in the conservation community, with some support from the U.S. Fish and Wildlife Service (USFWS), and the involvement of colleges and universities across the country, had not conspired and agreed to develop an analysis of the biodiversity of the U.S., which ultimately led to the development of GAP? It is easy for us to believe the influence of GAP has been tremendous because of the continued interest and the duplication of the concept across regions and organizations that we have both witnessed and participated in. But in fairness, we may have just been part of a larger cultural change in the conservation community as many scientists, scholars and practitioners con-

verged around the idea of using newly available data and analytical advancements to deal with issues surrounding rapidly declining or rare species.

It may not matter that much. Like the SLOSS (single large or several small) debates of years ago, the chicken and egg question of what drives which in society can be an interesting diversion. More importantly, however, we might want to pay close attention when we see a convergence of ideas from different organizations and actors. As I look at the updates and articles in this volume, I notice two important things. First, the focus of the last couple of years, in which we deliberately tried to push our projects over the hump to make sure analysis was possible at a national scale, is paying off. Updates related to the National Land Cover Viewer <<http://lc.gapanalysisprogram.com/landcoverviewer/>> and to the Protected Areas Database of the US (PAD-US) <<http://www.gap.uidaho.edu/padus/protectedareas.html>> discuss how GAP has crossed one of its most important milestones for a large portion of the data developed in recent years. These data have been incredibly complex, both conceptually and practically speaking. With GAP's relatively small budget, it has been difficult to plan and carry out projects of this scale in a reasonable timeframe. It would not have been possible without partnerships with like-minded organizations.

Secondly, the nature of our partnerships has changed over time. In the late 1990s, GAP worked closely at the state level as an organizational unit for building a national-scale effort, but also because the involvement of state agencies is critical for conservation efforts to be successful. Necessity has been the driver of adaptation. With limited resources, we had to look hard at what major data development projects we could actually manage, and look for partnerships to help us meet our national objectives. Without contributions from programs like LandFire, a USGS- and Forest Service-led effort that included mapping of ecological systems, the GAP-managed Land Cover Viewer would

not have been possible. This sort of partnership is evident throughout all our land cover and protected areas work. This has been possible, likely not because we sought it out, but because there does seem to be a convergence of ideas related to the need for consistent, seamless data sets that allow analysis of biodiversity.

Another example of convergence is GAP's involvement with the multi-agency State of the Birds report <<http://www.stateofthebirds.org/>>. GAP originated out of the Cooperative Research Unit program when it was a part of the FWS. There has been a long history of small projects and a lot of back and forth, but the needs of the FWS have always made managers view GAP data as a bit tangential. The bird conservation community has had a long history of looking at the complete life history needs for many species across their full range. This has brought them to the table with many different agencies. As they develop their third report, which will attempt to give some data-driven analysis, they have moved in our direction, seeing the need for protected areas and land cover data that is national and consistent across regions. In turn, we see the need to move a little further in their direction, and push for classifications and data resolutions that are meaningful to managers.

This year, as discussed inside, our challenge is to bring the species distribution and range data to the same point as the land cover and protected areas data. A year from now GAP should be serving a species data viewer with ranges, modeling information, predicted distributions, protection status and taxonomic information for most vertebrate species in the U.S. But more importantly, we hope to see a convergence of agencies and efforts in building these data, and using them to assess the most pressing biodiversity issues in the country. While GAP is a small program, the current emphases in the Department of Interior on Landscape Conservation Cooperatives and Regional Climate Science Centers again reflects a convergence of ideas, that multi-discipline, large geographic scale observation and analysis is the appropriate approach to society's current natural resource concerns.

GAP program staff and partners have held this as a collective viewpoint for many years. Whether we are leading the effort, or simply following the

times, it certainly seems like there is a need and opportunity for greater cooperation and mutual use of data. One thing is sure, given our experience over many years of data development, post hoc integration is important, but we need to understand our convergence of issues sooner and have an a priori plan to develop the data we need through partnerships as well. The needs are too great to go it alone. While planning to get ahead of endangered species crisis through data-driven planning might seem a little pie-in-the-sky opportunistic to some, the likely alternative is to fall into our historical roles of trying to quantify limiting factors and predicting tipping points for populations. This is a corner the wildlife community may have inadvertently backed itself into, trying to use science to predict minimum viable populations. There has to be a better way.